

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. **(Amended)** A communications module configured to selectively couple to a communications panel and a patch panel, the module comprising:

 a module casing having an interior portion;

 an optical circulator disposed within said interior portion, said optical circulator having comprising:

 a first port through which optical data is transmitted;

 a second port through which optical data is received;

~~and~~ a third port through which optical data is both transmitted and received; ~~and~~

a plurality of polarization beam splitters optically coupled to at least one of the first second or third ports;

at least one mirror for reflecting optical data;

a plurality of garnets optically coupled to at least one of the first second or third ports; and

at least one waveplate optically coupled to at least one of the first second or third ports; and

 a duplex connector supported by said module casing and adapted to couple to the communications panel, said duplex connector comprising a first connector supported by said module casing and being adapted to optically communicate with said first port and a

second connector supported by said module casing and being adapted to optically communicate with said second port; and

~~means for optically communicating said third port with the patch panel to enable bi-directional communication of optical data, said means for optically communicating being supported by said module casing.~~

2. **(Amended)** The communications module as recited in claim 1, ~~wherein said means for optically communicating comprises~~ further comprising a receptacle coupled to at least one of the first second or third ports and adapted to receive a pigtail lead.

3. **(Amended)** The communications module as recited in claim 1, ~~wherein said means for optically communicating comprises~~ further comprising a pigtail lead integrally formed with the communications module.

4. **(Original)** The communications module as recited in claim 1, wherein said first connector and said second connector are small form factor pluggable.

5. **(Original)** The communications module as recited in claim 1, wherein each of said first connector and said second connector is a gigabit interface converter.

6. **(Amended)** ~~The~~A communications module as recited claim 1, wherein said circulator comprises an optically non-reciprocal core comprising:

a module casing having an interior portion;

an optical circulator disposed within said interior portion, said optical circulator comprising:

a first port through which optical data is transmitted;

a second port through which optical data is received;

a third port through which optical data is both transmitted and received;

a first optical wedge optically coupled to said first port and said second port;

a Faraday rotator optically coupled to said first wedge, said Faraday rotator rotating a polarization of a transmit signal and a receive signal passing therethrough; and

a second optical wedge optically coupled to said Faraday rotator and to said third port; and

an external magnet at least partially surrounding the first optical wedge, the Faraday rotator, and the second optical wedge.

7. **(Original)** The communications module as recited in claim 1, wherein said first port is adapted to accept optical signals transmitted with a well maintained state of polarization.

8. **(Original)** The communications module as recited in claim 1, wherein said third port is adapted to receive optical signals transmitted with any state of polarization.

9. **(Amended)** A plug-in communication module configured to selectively couple to a communication panel and a patch panel, the module comprising:

a duplex connector supported by a module casing and adapted to couple to the communication panel, said duplex connector comprising:

a first connector supported by said module casing and adapted to receive a transmit signal from the communication panel; and

a second connector supported by said module casing and adapted to transmit a receive signal to the communication panel;

a patch panel connector connected to said module casing, said patch panel connector carrying both optical signals transmitted from the communication panel and optical signals to be received by the communication panel; and

an optical circulator in optical communication with said duplex connector and said patch panel connector, said optical circulator comprising:

a first port through which optical data is only transmitted;

a second port through which optical data is only received; and

a third port through which optical data is both transmitted and received;

a polarization beam splitter optically coupled to at least one of the first second or third ports;

a waveplate optically coupled to the polarization beam splitter optically coupled to at least one of the first second or third ports;

a garnet optically coupled to the waveplate optically coupled to at least one of the first second or third ports; and

a beam displacer optically coupled to the garnet optically coupled to at least one of the first second or third ports; and

wherein said optical circulator directs said transmit signal received at said first port to said third port and directs said receive signal received at said third port to said second port to enable bi-directional communication along a single optical fiber optically coupled to said third port of said circulator.

10. **(Original)** The communications module as recited in claim 9, wherein said first connector and said second connector are a small form factor pluggable connector.

11. **(Original)** The communications module as recited in claim 9, wherein said first connector and said second connector are a gigabit interface converter.

12. **(Original)** The communications module as recited in claim 9, wherein said patch panel connector is either fixably or removably connected to said module casing.

13. **(Canceled)**

14. **(Canceled)**

15. **(Amended)** The communications module as recited in claim, ~~14-9~~ wherein said first port is configured to accept optical signals transmitted with a well maintained state of polarization.

16. **(Amended)** The communications module as recited in claim, ~~14~~ 9 wherein said third port is adapted to receive optical signals transmitted with any state of polarization.

17. **(Amended)** A communications module configured to selectively couple to a communications panel, the module comprising:

a module casing;

a circulator disposed in said module casing, the circulator comprising;

a first waveplate;

a first beam displacer optically coupled to the first waveplate;

a second waveplate optically coupled to the first beam displacer; and

a second beam displacer optically coupled to the second waveplate;

a first connector disposed on said module casing and coupled to a first port of the circulator, wherein said first port of said circulator is adapted to transmit optical data;

a second connector disposed on said module casing and coupled to a second port of said circulator, wherein said second port of said circulator is adapted to receive optical data, and wherein said first and second connectors are adapted to couple to the communications panel; and

a third connector coupled to a third port of said circulator, wherein said third port of said circulator is adapted to propagate bi-directional optical data through said third connector.

18. **(Original)** The communications module as recited in claim 17, wherein said first and second connectors are small form factor pluggable connectors.

19. **(Original)** The communications module as recited in claim 17, wherein said first and second connectors are gigabit interface converters.

20. **(Original)** The communications module as recited in claim 17, wherein said third connector is an integrally formed patch panel connector.

21. **(Original)** The communications module as recited in claim 20, wherein said patch panel connector further comprises an optical fiber attached to said module casing.

22. **(New)** A communications module configured to selectively couple to a communications panel, the module comprising:

a module casing;

a circulator disposed in said module casing, the circulator comprising:

a first wedge;

a second wedge; and

a garnet disposed between the first wedge and the second wedge;

a first connector disposed on said module casing and coupled to a first port of the circulator, wherein said first port of said circulator is adapted to transmit optical data;

a second connector disposed on said module casing and coupled to a second port of said circulator, wherein said second port of said circulator is adapted to receive optical data, and wherein said first and second connectors are adapted to couple to the communications panel; and

a third connector coupled to a third port of said circulator, wherein said third port of said circulator is adapted to propagate bi-directional optical data through said third connector.

23. **(New)** The communications module as recited in claim 22, wherein said first and second connectors are small form factor pluggable connectors.

24. **(New)** The communications module as recited in claim 22, wherein said first and second connectors are gigabit interface converters.

25. **(New)** The communications module as recited in claim 22, wherein said third connector is an integrally formed patch panel connector.
26. **(New)** The communications module as recited in claim 25, wherein said patch panel connector further comprises an optical fiber attached to said module casing.
27. **(New)** The communications module as recited in claim 6, further comprising a receptacle coupled to at least one of the first second or third connectors and adapted to receive a pigtail lead.
28. **(New)** The communications module as recited in claim 6, further comprising a pigtail lead integrally formed with the communications module.
29. **(New)** The communications module as recited in claim 6, wherein said first connector and said second connector are small form factor pluggable.
30. **(New)** The communications module as recited in claim 6, wherein each of said first connector and said second connector is a gigabit interface converter.
31. **(New)** The communications module as recited in claim 6, wherein said first port is adapted to accept optical signals transmitted with a well maintained state of polarization.

32. **(New)** The communications module as recited in claim 6, wherein said third port is adapted to receive optical signals transmitted with any state of polarization.

Amendments to the Drawings

The attached sheets of drawings includes changes to Figures 1, 2, and 4. The attached sheets which include Figures 1, 2, 3 and 4, replace the original sheets including Figures 1, 2, 3, and 4. In Figure 1, a legend “(Prior Art)” as been included as suggested by the examiner. In Figure 2, references 220 and 216 have been included to correspond to the panel connector and the duplex connector respectively of Figure 2 as discussed in paragraph [035] of the written description. In Figure 2, reference 220 has been corrected as reference 222 referring to the patch panel, and reference 216 has been corrected as reference 212 to correspond with the second male connector as discussed in paragraph [035] of the written description. In Figure 4, reference 422 has been included to correspond with the receive port as described in paragraph [052] of the written description.

Attachment: Replacement Sheets
Annotated Sheets Showing Changes